

1. **CARLE McGETCHIN PIETERS**
Professor, Department of Geological Sciences

2. **Work Address:**

Brown University
Department of Geological Sciences
Box 1846
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3. **Education:**

- Ph.D., Massachusetts Institute of Technology, Planetary Science, 1977
- M.S., Massachusetts Institute of Technology, Planetary Science, 1972
- B.S., Massachusetts Institute of Technology, Planetary Science, 1971
- B.A., Antioch College, Math-Education, 1966

4. **Professional Positions:**

1994 to Present	Professor, Department of Geological Sciences, Brown University.
1983-1994	Associate Professor, Department of Geological Sciences, Brown University Providence, Rhode Island.
1980-1983	Assistant Professor of Research, Department of Geological Sciences, Brown University, Providence, Rhode Island.
1977-1980	Space Scientist, Lunar and Planetary Sciences Division, NASA Johnson Space Center, Houston, Texas.
1972-1975	Division of Sponsored Research Staff Scientist, Massachusetts Institute of Technology, Planetary Astronomy Laboratory, Department of Earth and Planetary Sciences.
1967-1969	Science teacher (Peace Corps), Sarawak, Malaysia.
1966-1967	High School. Math teacher, Somerville, Massachusetts.

5. **Completed Research:**

Publications: More than 160 research articles in peer-reviewed scientific journals, including a book *Remote Geochemical Analyses* (Cambridge University Press). In addition, each year tens of short and extended abstracts are presented at professional meetings and workshops (See attached for updates of the extended abstracts over the last 5 years at the Lunar and Planetary Science Conference, Houston)

6. **Research in Progress:**

- **PI, Moon Mineralogy Mapper (M3):** Principal Investigator for an imaging spectrometer (0.4-3.0 μm) to characterize and map the mineralogy of the Moon at high resolution. M3 was launched on the Indian Chandrayaan-1 mission to the Moon in October 2008 and will be in operation for two years.
- **Laboratory spectroscopy experiments:** Measuring and modeling the interaction of visible to mid-infrared radiation with geologic materials. Development of quantitative methods for extraction of compositional information. Includes extensive measurement and analyses of lunar samples and Mars meteorites as well as other meteorites and terrestrial materials.

- **Lunar science:** Remote compositional analysis using spacecraft and telescopic spectroscopic data. Science questions focus on formation and evolution of the lunar crust and character and diversity of mare basalt types. Craters and large basins are used as probes to the interior. The character and evolution of the enormous South Pole-Aitken Basin continues to be under detailed investigation.
- **Space weathering:** Characterize and understand the processes responsible for altering materials in the space environment and measure the effects of these processes on geologic samples. Derive the evolution of the regolith of airless bodies.
- **Dawn Science Team.** Participation in planning the mission to study the large asteroids Vesta and Ceres in detail. Principal responsibilities include oversight and integration of remote compositional measurements and development of links to meteorites and understanding of early solar system processes. Launched in 2007; arrives at Vesta in 2011.
- **Asteroid - meteorite links:** Evaluate observational and experimental data to identify asteroidal source bodies for diverse meteorite types. Science focus is on evolution of the early solar system.
- **International collaboration:** Participate in KAGUYA (SELENE), the Japanese mission to the Moon. Continue quantitative modeling of lunar sample data and geologic analysis of multi-spectral images with scientists at Kharkov University, Ukraine. Promoting and assisting in planning international exploration with Germany, England, Japan, Russia, and India.

Mission Involvement:

Chandrayaan-1 (a mission to the Moon launched by the Indian Space Research Organization in October 2008). I am Principal Investigator of a US guest instrument, the Moon Mineralogy Mapper (M3), selected by NASA's Discovery Program after an intense peer-review process. I have overall responsibility for the success of this instrument and M3 Science Team activities. M3 was built by the Jet Propulsion Laboratory.

Dawn (a Discovery mission launched in 2007) Co-Investigator. Participation in planning the mission to study the large asteroids Vesta and Ceres in detail. Principal responsibilities include oversight and integration of remote compositional measurements and development of links to meteorites and understanding of early solar system processes.

7. Service:

Current and Recent Service to the Department/University:

- University committee: Tenure, Promotion and Appointments Committee (TPAC) 2007 - present
- Departmental committees: Facilities Committee (06, 07); Curriculum Committee (04, 05)
- Lecturer for Alumni and Development

Current and Recent Service to the Profession:

- Chair, MoonLITE Science Evaluation Board, NASA-UK (2008)
- Member, AGU Flinn award committee (2006-2008; continuing)
- Co-Chair, National Academies, NRC Space Studies Board, Committee on Scientific Context for Exploration of the Moon (2006-2007)
- Chair, Awards Committee, American Geophysical Union, Planetary Sciences Section (2006 to present)

- Member, Planetary Protection Advisory Committee, a NASA sponsored committee to advise the Planetary Protection Officer on forward and back contamination issues. [2002 to present]
- Member, American Geophysical Union Fellows Committee [2001 to 2006]
- Science Manager, NASA/Keck Reflectance Experiment Laboratory (RELAB) [current]
- Associate Editor, *Meteoritics and Planetary Sciences*, 1998-present
- Member, Visiting Committee, MIT Department of Earth, Atmosphere, and Planetary Sciences [current]
- Universities Space Research Association (USRA) Council of Institutions, representative for Brown University [current]
- President, ILEWG (International Lunar Exploration Working Group) [2002-2004]
- Chair, Solar System Exploration Survey, Inner Planets Panel, NAS/NRC [2001/2]
- Member, Advisory Committee on Hall of Meteorites, American Museum of Natural History, NYC [2001/2]
- Past President, Planetary Sciences Section, American Geophysical Union, 1998 - 2000

8. Honors and Awards

Recent Honors

- Elected Fellow of American Association for the Advancement of Science (2007)
- Elected member of International Academy of Astronautics (2006)
- Gerard P. Kuiper Prize, American Astronomical Society, Division for Planetary Sciences, 2004
- Elected President, ILEWG (International Lunar Exploration Working Group) 2002-2004
- Elected Chair, American Association Advancement of Science, Astronomy Section 2002/3
- Elected Fellow, American Geophysical Union, 2001

9. Teaching:

Geoscience Courses 2006-2008:

Each term includes several Geo 191/192 or Geo 211/212 Independent Study/Research
 CM Pieters was on sabbatical all of 2008. Student advising continued, but no formal courses were taught.

Fall 2007: GEOL 1710 Remote Sensing of Earth and Planetary Surfaces

Spring 2007: Geo284: Asteroids and Meteorites

Fall 2006: Geo171 Remote Sensing of Earth and Planetary Surfaces

Spring 2006: Geo 281 Current Hot Topics in Planetary Science

Students directly supervised 2007-2008:

Noah Petro: graduate student, completion of Master of Science Thesis 2003; studies in remote sensing and lunar evolution. PhD completed 2007; currently working at NASA Goddard Space Flight Center (MD)

Rachel Klima; graduate student; studies included work on laboratory studies of lunar, Martian, and terrestrial materials; has become the world's expert on NIR spectroscopy of pyroxenes. PhD completed 2008; currently working at Brown as a post-doctoral Research Associate.

Peter Isaacson: 4th year graduate student; involved with remote compositional analysis; very active in M3 and working with lunar samples in the laboratory; thesis emphasizes the Mg-suite of lunar rocks.

Leah Cheek: 1st year graduate student; beginning a project on the characteristics and context of anorthositic plagioclase, with emphasis on the lunar magma ocean.

10. Prepared: January 2009

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Publications in peer-reviewed journals, articles, or books, 2003 to 2008.

2003

- Pieters, C. M., and L. A. Taylor, Systematic global mixing and melting in lunar soil evolution, *Geophys. Res. Lett.*, **30**,(20), 2048, doi:10.1029/2003GL018212, 2003.
- Noble, S. K., and C. M. Pieters, Space Weathering on Mercury: Implications for Remote Sensing, *Solar System Research*, vol. 37, issue 1, 31-35, 2003.
- Shkuratov, Y. G., D. G. Stankevich, V. G. Kaydash, V. Omelchenko, C. M. Pieters, P. C. Pinet, S. D. Chevrel, Y. H. Daydou, B. H. Foing, Z. Sodnik, J. L. Josset, L. A. Taylor, and V. V. Shevchenko, Composition of the lunar surface as will be seen from SMART-1: A simulation using Clementine data, *Journal of Geophysical Research*, **108**,(E4), 10.1029/2002JE001971, 2003.
- Solar System Exploration Survey (committee chaired by M. Belton), Inner Planets Panel (sub-committee chaired by C. Pieters), in *New Frontiers in the Solar System: An Integrated Exploration Strategy*, National Research Council of the National Academies, 2003.

2004

- Petro, N.E., and C.M. Pieters, Surviving the heavy bombardment: Ancient material at the surface of South Pole-Aitken Basin, *Journal Geophysical Research*, **109**, No. E6, E06004, doi:10.1029/2003JE002182., 2004.
- Sears, D., C. Allen, D. Britt, D. Brownlee, M. Franzen, L. Gefert, S. Gorovan, C. Pieters, J. Preble, D. Scheeres and E. Scott (2004). "The Hera mission: multiple near-earth asteroid sample return." *Advances in Space Research* **34**: 2270-2275.
- Russell, C.T., A. Coradini, U. Christensen, M.C. De Sanctis, W.C. Feldman, R. Jaumann, H.U. Keller, A. Konopliv, T.B. McCord, L.A. McFadden, H.Y. McSween Jr., S. Mottola, G. Neukum, C.M. Pieters, T.H. Prettyman, C.A. Raymond, D.E. Smith, M.V. Sykes, B.G. Williams, J. Wise, and M.T. Zuber, Dawn: A journey in space and time, *Planetary and Space Science*, **52**, 465-489, 2004.

2005

- Dyar, M. D., A. H. Treiman, C. M. Pieters, T. Hiroi, M. D. Lane and V. O'Connor. "MIL03346, the most oxidized Martian meteorite: A first look at spectroscopy, petrography, and mineral chemistry." *Journal of Geophysical Research (Planets)* **110**: E09005, doi:10.1029/2005JE002426, 2005.
- Noble, S. K., L. P. Keller and C. M. Pieters., "Evidence of space weathering in regolith breccias I: Lunar regolith breccias." *Meteoritics and Planetary Science* **40**: 397, 2005.
- Shkuratov, Y. G., V. G. Kaydash, and C. M. Pieters (2005), Lunar Clinopyroxene and Plagioclase: Surface Distribution and Composition, *Solar System Research*, **39**, 255-266.

2006

- Klima, R. L., and C. M. Pieters (2006), Near- and mid-infrared microspectroscopy of the Ronda peridotite, *J. Geophys. Res.*, **11**.E01005, doi:10.1029/2005JE002537

- Noble, S. K., C. M. Pieters, T. Hiroi, and L. A. Taylor (2006), Using the modified Gaussian model to extract quantitative data from lunar soils, *J. Geophys. Res.*, 111, E11009, doi:10.1029/2006JE002721
- Petro, N. E., and C. M. Pieters (2006), Modeling the provenance of the Apollo 16 regolith, *J. Geophys. Res.*, 111, E09005, doi:10.1029/2005JE002559.
- Pieters, C. M., R. P. Binzel, D. D. Bogard, T. Hiroi, D. W. Mittlefehldt, L. E. Nyquist, A. S. Rivkin, and H. Takeda (2006), Asteroid-Meteorite Links: The Vesta Conundrum(s), *Asteroids, Comets, Meteors*, 229th Symposium of the International Astronomical Union, 273-288, 210.1017/S1743921305006794.
- Pieters, C. M., Y. Shkuratov, V. G. Kaydash, D. Stankevich, and L. Taylor (2006), Lunar soil characterization consortium analyses: Pyroxene and maturity estimates derived from Clementine image data, *Icarus*, 184, 83-101, doi:10.1016/j.icarus.2006.04.013..
- Russell, C. T., F. Capaccioni, A. Coradini, U. Christensen, M. C. De Sanctis, W. C. Feldman, R. Jaumann, H. U. Keller, A. Konopliv, T. B. McCord, L. A. McFadden, H. Y. McSween, S. Mottola, G. Neukum, C. M. Pieters, T. H. Prettyman, C. A. Raymond, D. E. Smith, M. V. Sykes, B. Williams, and M. T. Zuber (2006), Dawn discovery mission to Vesta and Ceres: Present status, *Advances in Space Research*, 38, 2043-2048.
- Schultz, P. H., M. I. Staid, and C. M. Pieters (2006), Lunar activity from recent gas release, *Nature*, 444, 184-186.
- Shkuratov, Y., S. Bondarenko, A. Ovcharenko, C. M. Pieters, T. Hiroi, H. Volten, O. Muñoz, and G. Videen (2006), Comparative studies of the reflectance and degree of linear polarization of particulate surfaces and independently scattering particles, *Journal of Quantitative Spectroscopy & Radiative Transfer*, 100, 340-358.
- Taylor S. R, Pieters C. M., and MacPherson (2006), Chapter 7: Earth-Moon System, Planetary Science, and Lessons Learned, in *New Views of the Moon*, edited by Jolliff et. al., *Revs. In Min. and Geochem.*, Vol 60, pp 657-704.

2007

- Dyar, M. D., R. L. Klima, D. Lindsley, and C. M. Pieters (2007), Effects of differential recoil-free fraction on ordering and site occupancies in Mössbauer spectroscopy of orthopyroxenes, *American Mineralogist*, 92, 424-428, doi: 10.2138/am.2007.2441.
- Klima, R. L., C. M. Pieters, and M. D. Dyar (2007), Spectroscopy of synthetic Mg-Fe pyroxenes I: Spin-allowed and spin-forbidden crystal field bands in the visible and near-infrared, *Meteor. Planet. Sci.*, 42, 235-253.
- Noble, S. K., C. M. Pieters, and L. P. Keller (2007), An experimental approach to understanding the optical effects of space weathering, *Icarus*, 192, 629-642, doi: 10.1016/j.icarus.2007.07.021.
- Pieters, C.M. et al., Lunar international science coordination/calibration targets (L-ISCT), *J. Adv. Space Res.* (2007), doi:10.1016/j.asr.2007.05.038
- Robinson, M. S., B. W. Hapke, J. B. Garvin, D. Skillman, J. F. Bell III, M. P. Ulmer, and C. M. Pieters (2007), High resolution mapping of TiO₂ abundances on the Moon using the Hubble Space Telescope, *Geophys. Res. Lett.*, 34, L13203, doi: 10.1029/2007GL029754.
- Treiman, A. H., M. D. Dyar, M. C. McCanta, S. K. Noble, and C. M. Pieters (2007), Martian Dunitic NWA 2737: Petrographic constraints on geological history, shock events, and olivine color, *J. Geophys. Res.*, 112, E04002, doi: 10.1029/2006JE002777.

2008

- Dyar, MD., E.C. Sklute, O.N. Menzies, P.A. Bland, D. Lindsley, T. Glotch, M.D. Lane, M.W. Schaeffer, B. Wopenka, R. Klima, J.L. Bishop, T. Hiroi, C. Pieters, and J. Sunshine Spectroscopic Characteristics of Synthetic Olivine: An Integrated Multi-Wavelength and Multi-Technique Approach (2008) *Am. Min. in press*.
- Junichi Haruyama, Makiko Ohtake, Tsuneo Matsunaga, Tomokatsu Morota, Chikatoshi Honda, Yasuhiro Yokota, Carle M. Pieters, Seiichi Hara, Kazuyuki Hioki, Kazuto Saiki, Hideaki Miyamoto, Akira Iwasaki, Masanao Abe, Yoshiko Ogawa, Hiroshi Takeda, Motomaro Shirao, Atsushi Yamaji, Jean-Luc Josset (2008a) Lack of Exposed Ice Inside Lunar South Pole Shackleton Crater, *Science*, Volume 322, Issue 5903, pp. 938- [Published online 23 October 2008; 10.1126/science.1164020]
- Junichi Haruyama, Makiko Ohtake, Tsuneo Matsunaga, Tomokatsu Morota, Chikatoshi Honda, Yasuhiro Yokota, Masanao Abe, Yoshiko Ogawa, Hideaki Miyamoto, Akira Iwasaki, Carle M. Pieters, Noriaki Asada, Hirohide Demura, Naru Hirata, Junya Terazono, Sho Sasaki, Kazuto Saiki, Atsushi Yamaji, Masaya Torii, Jean-Luc Josset (2008b) Long-Lived Volcanism on the Lunar Farside Revealed by SELENE Terrain Camera, *Science Express*: [Published online 6 November 2008; 10.1126/science.1163382]
- Isaacson PJ and CM Pieters (2008) Origins of the Northern Imbrium Noritic Anomaly, *J. Geophys Res.*, submitted
- Klima, RL, CM Pieters, and MD Dyar (2008) Characterization of the 1.2 μm M1 pyroxene band: Extracting cooling history from near-IR spectra of pyroxenes and pyroxene-dominated rocks, *Meteoritics and Planetary Science*. vol 43, 1591-1604
- Nimura, T., T. Hiroi, and C. M. Pieters (2008), An improved scheme for modeling the reflectance spectra of space-weathered regoliths, *Earth Planets Space*, 60, 271-275.
- Petro, N. E. and Pieters, C. M. (2008) The Lunar-Wide Effects of Basin Ejecta Distribution on the Early Megaregolith, *Meteoritics and Planetary Science*, v. 43(8), p. 1517-1529.
- Pieters C.M., R. L. Klima, T. Hiroi, M. D. Dyar, M. D. Lane, A. H. Treiman, S. K. Noble, J. M. Sunshine, and J. L. Bishop. (2008) Martian Dunite NWA 2737: Integrated Spectroscopic Analyses of Brown Olivine, *J. Geophys. Res.* 113, E06004, doi: 10.1029/2007JE002939.
- Pieters C. M. and the M3 Science Team (2008) The Moon Mineralogy Mapper (M³) on Chandrayaan-1, *Current Science* in press

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Extended LPSC abstracts, 2003 to 2007 [published, but not peer reviewed].

2003

- Hiroi, T., L. V. Moroz, T. V. Shingareva, A. T. Basilevsky, and C. M. Pieters, Effects of Microsecond Pulse Laser Irradiation on VIS-NIR Reflectance Spectrum of Carbonaceous Chondrite Simulant: Implications for Martian Moons and Primitive Asteroids, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1324, 2003.
- Jolliff, B. L., L. A. Haskin, R. L. Korotev, J. J. Papike, C. K. Shearer, C. M. Pieters, and B. A. Cohen, Scientific Expectations from a Sample of Regolith and Rock Fragments from the Interior of the Lunar South Pole-Aitken Basin, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1989, 2003.
- Lawrence, D. J., C. M. Pieters, R. C. Elphic, W. C. Feldman, O. Gasnault, S. Maurice, and T. H. Prettyman, Regional Elemental Abundances within South Pole-Aitken Basin as measured with Lunar Prospector Gamma-ray Spectrometer Data, *Lunar Planet. Sci. XXXIV*, CD-ROM, Abstract #1679, 2003.
- Noble, S. K., L. P. Keller, and C. M. Pieters, Making a Regolith Breccia, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1626, 2003.
- Noble, S. K., C. M. Pieters, and L. P. Keller, The Optical Properties of Nanophase Iron: Investigation of a Space Weathering Analog, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1172, 2003.
- Petro, N. E., and C. M. Pieters, How Much Melt Breccia Can Be Found in South Pole-Aitken Basin?, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1427, 2003.
- Pieters, C. M., T. Hiroi, C. T. Russell, and J. McSween, H.Y., HED Meteorites: Ground Truth to Investigate Petrogenesis on Vesta, *Meteorit. Soc. Meeting*, Münster, 2003.
- Pieters, C. M., and L. A. Taylor, New Model for Agglutinitic Glass Formation from LSCC Data, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1223, 2003.
- Pieters, C. M., M. Duke, J. W. Head III, and B. L. Jolliff, Science Options for Sampling South Pole-Aitken Basin, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1366, 2003.
- Russell, C. T., A. Coradini, M. C. De Sanctis, W. C. Feldman, R. Jaumann, A. S. Konopliv, T. B. McCord, L. A. McFadden, H. Y. McSween, S. Mottola, G. Neukum, C. M. Pieters, T. H. Prettyman, C. A. Raymond, D. E. Smith, M. V. Sykes, B. G. Williams, J. Wise, and M. T. Zuber, Dawn Mission: A Journey in Space and Time, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1473, 2003.
- Shkuratov, Y. G., C. M. Pieters, V. Omelchenko, D. G. Stankevich, V. G. Kaydash, and L. A. Taylor, Estimates of the Lunar surface Composition with Clementine Images and LSCC Data, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #, 2003.
- Staid, M. I., E. M. Eliason, L. R. Gaddis, and C. M. Pieters, Global Comparisons of Mare Crater Spectra from Clementine UVVIS and NIR Data, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1767, 2003.
- Taylor, L. A., C. M. Pieters, A. Patchen, D. H. Taylor, R. V. Morris, L. P. Keller, and D. S. McKay, Mineralogical Characterization of Lunar Highland Soils, *Lunar and Planetary Science Conference XXXIV*, CD-ROM, Abstract #1774, 2003.

2004

- Gaddis, L.R., K. Tanaka, T. Hare, J. Skinner, B.R. Hawke, P.D. Spudis, D.B.J. Bussey, C.M. Pieters, and D.J. Lawrence, A New lunar Geologic Mapping Program, *Lunar And Planetary Science Conference XXXV*, Abstract 1418, 2004.
- Hiroi, T., C.M. Pieters, M.J. Rutherford, M.E. Zolensky, S. Sasaki, Y. Ueda, and M. Miyamoto, What are the P-type Asteroids Made of?, *Lunar And Planetary Science Conference XXXV*, Abstract 1616, 2004.
- Kaydash, V.G., Y.G. Shkuratov, D.G. Stankevich, V. Omelchenko, C.M. Pieters, and D.H. Taylor, Maps Characterizing the Lunar Regolith Maturity, *Lunar And Planetary Science Conference XXXV*, Abstract 1508, 2004.
- Klima, R., and C.M. Pieters, Infrared Spectroscopy on a microscopic Scale: Investigating the Technique of Microspectroscopy and its application to the Study of Lunar Breccia, *Lunar And Planetary Science Conference XXXV*, Abstract 1305, 2004.
- Moroz, L.V., T. Hiroi, T.V. Shingareva, A.T. Basilevsky, A.V. Fisenko, L.F. Semjonova, and C.M. Pieters, Reflectance Spectra of CM2 Chondrite Mighei Irradiated with Pulsed Laser and Implications for Low-Albedo Asteroids and Martian Moons, *Lunar And Planetary Science Conference XXXV*, Abstract 1279, 2004.
- Noble, S.K., C.M. Pieters, and L.P. Keller, Quantitative Aspects of Space Weathering, *Lunar And Planetary Science Conference XXXV*, Abstract 1301, 2004.
- Petro, N.E., and C.M. Pieters, Comparison of the Geologic Setting of the South Pole-Aitken Basin Interior with Apollo 16: Implications for Regolith Components, *Lunar And Planetary Science Conference XXXV*, Abstract 1345, 2004.
- Pieters, C.M., M.D. Dyar, T. Hiroi, J.L. Bishop, J.M. Sunshine, and R. Klima, Pigeonite Masquerading as Olivine at Mars: First Results from Mars Spectroscopy Consortium, *Lunar And Planetary Science Conference XXXV*, Abstract 1171, 2004.
- Pieters, C.M., L.A. Taylor, D.S. McKay, R.V. Morris, and L.P. Keller, LSCC Apollo and Luna Soil Analyses: Update of Soil Evolution Model, *Lunar And Planetary Science Conference XXXV*, Abstract 1336, 2004.
- Pieters, C.M., and T. Hiroi, RELAB (Reflectance Experiment Laboratory): A NASA Multiuser Spectroscopy Facility, *Lunar And Planetary Science Conference XXXV*, Abstract 1720, 2004.
- Sunshine, J.M., J.L. Bishop, D. Dyar, T. Hiroi, R. Klima, and C.M. Pieters, Near-Infrared Spectra of Martian Pyroxene Separates: First Results from Mars Spectroscopy Consortium, *Lunar And Planetary Science Conference XXXV*, Abstract 1636, 2004.

2005

- Bentley, M. S., A. J. Ball, M. D. Dyar, C. M. Pieters, I. P. Wright and J. C. Zarnecki (2005). Space Weathering: Laboratory Analyses and In-Situ Instrumentation. Lunar and Planetary Science XXXVI, Houston, TX
- Dyar, M. D., C. M. Pieters, T. Hiroi, M. D. Lane and G. J. Marchand (2005). Integrated Spectroscopic Studies of MIL03346. Lunar and Planetary Science XXXVI, Houston, TX
- Gaddis, L. R., J. A. Skinner, Jr., T. M. Hare, K. L. Tanaka, B. R. Hawke, P. D. Spudis, D. B. J. Bussey, C. M. Pieters and D. J. Lawrence (2005). Lunar Geologic Mapping: Preliminary Mapping of Copernicus Quad. Lunar and Planetary Science XXXVI, Houston, TX.

- Hiroi, T., E. Tonui, C. M. Pieters, M. E. Zolensky, Y. Ueda, M. Miyamoto and S. Sasaki (2005). Meteorite WIS91600: A New Sample Related to a D- or T-type Asteroid. *Lunar and Planetary Science XXXVI*, Houston, TX
- Klima, R. L. and C. M. Pieters (2005). Capabilities and Limitations of Infrared Reflectance Microspectroscopy. *Lunar and Planetary Science XXXVI*, Houston, TX.
- Klima, R. L., C. M. Pieters and M. D. Dyar (2005). Pyroxene Spectroscopy: Effects of Major Element Composition on Near, Mid and Far-Infrared Spectra. *Lunar and Planetary Science XXXVI*, Houston, TX.
- Noble, S. K., C. M. Pieters and T. Hiroi (2005). Extracting Quantitative Data from Lunar Soil Spectra. *Lunar and Planetary Science XXXVI*, Houston, TX.
- Petro, N. E. and C. M. Pieters (2005). The Lunar-wide Effects of the Formation of Basins on the Megaregolith. *Lunar and Planetary Science XXXVI*, Houston, TX
- Pieters, C. M. and S. Tompkins (2005). Remote Sensing of Lunar Mineralogy: The Glass Conundrum. *Lunar and Planetary Science XXXVI*, Houston, TX
- Pieters, C. M. and M3 Team (2005). "Science and Exploration Opportunities Through Moon Mineralogy Mapper." *LPI Contributions 1287*: 73.

2006

- Gaddis, L. R., J. A. Skinner Jr., T. Hare, K. Tanaka, B. R. Hawke, P. Spudis, B. Bussey, C. M. Pieters, and D. Lawrence (2006), The lunar geologic mapping program and status of Copernicus quadrangle mapping, in *Lunar and Planetary Science Conference XXXVII*, p. 2135, Houston, TX.
- Garvin, J. B., M. S. Robinson, B. Hapke, J. F. Bell III, D. Skillman, M. Ulmer, and C. M. Pieters (2006), UV imaging of the Moon from the Hubble space telescope, in *Lunar and Planetary Science Conference XXXVII*, p. 2100, Houston, TX.
- Isaacson, P. J., and C. M. Pieters (2006), Variations within the northern Imbrium Noritic deposits, in *Lunar and Planetary Science Conference XXXVII*, p. 1867, Houston, TX.
- Klima, R. L., C. M. Pieters, and M. D. Dyar (2006), Pyroxene spectroscopy at visible wavelengths: Effects of iron content on spin forbidden absorption features, in *Lunar and Planetary Science Conference XXXVII*, p. 1637, Houston, TX.
- Korokhin, V. V., Y. G. Shkuratov, D. G. Stankevich, C. M. Pieters, and U. Mall (2006), Artificial neural networks as a tool for prognosis of chemical and mineral composition of lunar soils from spectral measurements, in *Lunar and Planetary Science Conference XXXVII*, p. 1280, Houston, TX.
- McCanta, M. C., M. D. Dyar, A. H. Treiman, C. M. Pieters, T. Hiroi, M. D. Lane, and J. L. Bishop (2006), Mössbauer and synchrotron microxanes analysis of NWA2737, in *Lunar and Planetary Science Conference XXXVII*, p. 1751, Houston, TX.
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